computers & structures

An International Journal

List of Contents and Author Index

Volume 50, 1994

PERGAMON

computers & structures

An International Journal

editor-in-chief

Prof. H. Liebowitz c/o A.E.R.D.C.O.
P.O. Box 25736
Washington, DC 20007-8736, U.S.A.

editorial advisory board

Prof. E. R. Arantes e Oliveira
Lisbon, Portugal

Prof. H. Ashley
Calif., U.S.A.

Prof. S. N. Atluri
Ga, U.S.A.

Dr M. L. Baron
N.Y., U.S.A.

Prof. K. J. Bathe
Mass., U.S.A.

Prof. B. A. Boley
N.Y., U.S.A.

Prof. L. Broglio
Rome, Italy

Dr T. A. Cruse
Tenn., U.S.A.

Prof. S. J. Fenves
Pa, U.S.A.

Dr R. E. Fulton
Ga, U.S.A

Dr D. S. Griffin
Pa, U.S.A.

Dr M. C. Junger
Mass., U.S.A.

Dr Z. Knesl
Brno, Czech Republic

Prof. R. D. Logcher
Mass., U.S.A.

Dr R. H. MacNeal
Calif., U.S.A.

Prof. P. V. Marcal
Calif., U.S.A.

Prof. Ch. Massonnet
Liège, Belgium

Dr R. J. Melosh
N.C., U.S.A.

Prof. T. Moan
Trondheim, Norway

Prof. F. Niordson
Lyngby, Denmark

Prof. A. K. Noor
Va, U.S.A.

Prof. J. T. Oden
Tx., U.S.A.

Prof. K. A. V. Pandalai
Madras, India

Prof. T. H. H. Pian
Mass., U.S.A.

Dr G. G. Pope
Hants, U.K.

Prof. E. P. Popov
Calif., U.S.A.

Dr J. P. Raney
Va, U.S.A.

Prof. J. N. Reddy
Va, U.S.A.

Dr E. M. Q. Røren
Oslo, Norway

Prof. L. A. Schmit, Jr
Calif., U.S.A.

Prof. E. Sevin
D.C., U.S.A.

Dean A. Sherbourne
Ontario, Canada

Mr I. C. Taig
Preston, U.K.

Prof. B. H. V. Topping
Edinburgh, U.K.

Prof. T. G. Toridis
D.C., U.S.A.

Prof. F. Venancio-Filho
Rio de Janeiro, Brazil

Prof. Y. Yamada
Tokyo, Japan

Prof. O. C. Zienkiewicz
Swansea, U.K.

Production Editor: Susan Li, Elsevier Science Ltd, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, U.K.

Publishing, Subscription, and Advertising Offices: Elsevier Science Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, U.S.A., or Elsevier Science Ltd, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, U.K.

Published semi-monthly (four volumes 1994)

Annual subscription rates (1994)
Annual Institutional Subscription Rates 1994: North, Central and South America, U.S.$2450; Rest of World, £1591. Associated Personal Subscription Rates are available on request for those whose institutions are library subscribers. Sterling prices exclude VAT. Non-VAT registered customers in the European Community will be charged the appropriate VAT in addition to the price listed. Prices include postage and insurance and are subject to change without notice.

Second class postage paid at Rahway, NJ. Postmaster send address corrections to Computers & Structures, c/o Elsevier Science Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, U.S.A.

Whilst every effort is made by the publishers and editorial board to see that no inaccurate or misleading data, opinion or statement appears in this journal, they wish to make it clear that the data and opinions appearing in the articles and advertisements herein are the sole responsibility of the contributor or advertiser concerned. Accordingly, the publishers, the editorial board and editors and their respective employees, officers and agents accept no responsibility or liability whatsoever for the consequences of any such inaccurate or misleading data, opinion or statement.

Copyright © 1994 Elsevier Science Ltd

Cover design by Mr J. Koukos

LIST OF CONTENTS

NUMBER 1

N. Siva Prasad, B. Sri Hari and S. Prakash Ganti	1	An adaptive mesh generation scheme for finite element analysis
H.-J. Lee	11	Dynamics and probabilistic fatigue analysis schemes for high-speed press machines
S. H. Lo and C. K. Lee	21	Generation of gradation meshes by the background grid technique
S. Ghosh and R. L. Mallett	33	Voronoi cell finite elements
P. C. Tsopelas, S. Nagarajaiah, M. C. Constantinou and A. M. Reinhorn	47	Nonlinear dynamic analysis of multiple building base isolated structures
O. L. Roufaeil	59	New rectangular plate bending elements and their performance
P. Balasubramanian, J. G. Jagadeesh, H. K. Suhas and V. Ramamurti	67	Modal methods for the analysis of cyclic symmetric structures
Jian-Wu Zhang and W. B. Krätzig	79	Buckling analysis of rectangular plates using a four-noded finite element
J. L. Roca	87	Computing software structural complexity
N. Vlahopoulos	97	A numerical structure-borne noise prediction scheme based on the boundary element method, with a new formulation for the singular integrals
H. H. Lee and C.-S. Tsai	111	Analytical model of viscoelastic dampers for seismic mitigation of structures
T. Kant and J. R. Kommineni	123	Large amplitude free vibration analysis of cross-ply composite and sandwich laminates with a refined theory and C^0 finite elements
T. Kant, S. Kumar and U. P. Singh	135	Shell dynamics with three-dimensional degenerate finite elements
H. A. El-Ghazaly and M. A. Al-Hajry	147	Probabilistic finite element analysis of railway tracks under multiple loads
		Announcement
	159	Call for papers: the Second International Conference on Computational Structures Technology
	I	Software Survey Section

NUMBER 2

J. R. Banerjee and **F. W. Williams**	161	An exact dynamic stiffness matrix for coupled extensional–torsional vibration of structural members
K. N. Koo and **I. Lee**	167	Aeroelastic behavior of a composite plate wing with structural damping
M. Saje and **G. Jelenić**	177	Finite element formulation of hyperelastic plane frames subjected to nonconservative loads
J. C. Sung and **D. C. Wong**	191	Evaluation of elastodynamic interfacial and tangential stresses by simple regularization method
J. A. Garrido, A. Foces and **F. París**	201	An incremental procedure for three-dimensional contact problems with friction
E. Carrera	217	A study on arc-length-type methods and their operation failures illustrated by a simple model
Xiaoping Shu and **Liangxin Sun**	231	An improved simple higher-order theory for laminated composite plates
A. S. K. Kwan and **S. Pellegrino**	237	Matrix formulation of macro-elements for deployable structures
J. D. Connelly and **R. L. Huston**	255	The dynamics of flexible multibody systems: a finite segment approach—I. Theoretical aspects
J. D. Connelly and **R. L. Huston**	259	The dynamics of flexible multibody systems: a finite segment approach—II. Example problems
H. H. Vaziri	263	Impedance functions to model boundary zones with non-reflection interface properties
V. Kompiš	273	Finite elements satisfying all governing equations inside the element
Y. J. Lee and **B. C. Lee**	279	A new three-field mixed variational principle for the analysis of linear elastic problems
		Compendium
R. A. Dusseau, H. N. Dubaisi and **S. M. Jomaa**	287	Bridge database for the I-5 corridor in the Pacific Northwest
	I	Software Survey Section

NUMBER 3

S. Tizzi	299	A numerical procedure for the analysis of a vibrating panel in critical flutter conditions

Cho-Chung Liang, Ching-Cho Liao and **Tso-Liang Teng**	317	Optimal design of an unstayed polemast on a navy surface ship
T. Hwang and **I. D. Parsons**	325	Parallel implementation and performance of multigrid algorithms for solving eigenvalue problems
M. A. Zikry	337	An accurate and stable algorithm for high strain-rate finite strain plasticity
T. Kant and **B. S. Manjunatha**	351	On accurate estimation of transverse stresses in multilayer laminates
J. H. Liu and **K. S. Surana**	367	Piecewise hierarchical p-version axisymmetric shell element for laminated composites
F. J. Orth and **K. S. Surana**	383	p-Version two-dimensional beam element for geometrically nonlinear analysis
T. Petersen and **P. S. Frederiksen**	393	Fillet design in cold forging dies
W.-H. Chen and **Y.-M. Tu**	401	Thermal analysis for two-dimensional fracture problems using the boundary element alternating method
K. H. Low	409	An equivalent-center method for quick frequency analysis of beams carrying a concentrated mass
Y. Wang and **R. L. Huston**	421	A lumped parameter method in the nonlinear analysis of flexible multibody systems
J. B. Min, J. M. Bass and **L. W. Spradley**	433	Adaptive finite element methods for two-dimensional problems in computational fracture mechanics
		Announcement
	447	Call for papers: the Second International Conference on Computational Structures Technology
	I	Software Survey Section

NUMBER 4

S. Krenk	449	A general format for curved and non-homogeneous beam elements
S. M. Fereig	455	An application of linear programming to bridge design with standard prestressed girders
C. J. Chen, W. Liu and **S. M. Chern**	471	Vibration analysis of stiffened plates
L. K. Shen	481	Sinusoidal analysis of Space Shuttle main engine structures

S. Y. Chen and **T. N. Farris**	491	Boundary element crack closure calculation of axisymmetric stress intensity factors
P. K. Gotsis	499	Structural optimization of shell structures
J. Qin and **D. T. Nguyen**	509	Generalized exponential penalty function for non-linear programming
J. Qin and **D. T. Nguyen**	515	Structure/load-dependent vectors for linear structural dynamic analysis
L. P. Kollár	525	Three-dimensional analysis of composite cylinders under axially varying hygrothermal and mechanical loads
M. Mukhopadhyay	541	Stiffened plates in bending
R. D. Cook	549	Four-node 'flat' shell element: drilling degrees of freedom, membrane–bending coupling, warped geometry, and behavior
Z. S. Liu, S. H. Chen and **W. Z. Han**	557	Solving the extremum of static response for structural systems with unknown-but-bounded parameters
J. Atkočiūnas and **A. Norkus**	563	Method of fictitious system for evaluation of frame shakedown displacements
D. Bushnell and **W. D. Bushnell**	569	Minimum-weight design of a stiffened panel via PANDA2 and evaluation of the optimized panel via STAGS
	I	Software Survey Section

NUMBER 5

S. R. Marur and **T. Kant**	603	A stress correction procedure for the analysis of inelastic frames under transient dynamic loads
S. R. Marur and **T. Kant**	615	A modified form of the central difference predictor scheme for damped nonlinear systems
Dongyao Tan	619	Discrete analysis method for random vibration of structures subjected to temporally and spatially correlated coloured excitations
Lin Jiahao, Zhang Wenshou and **Li Jianjun**	629	Structural responses to arbitrarily coherent stationary random excitations
A. Joseph Stanley and **N. Ganesan**	635	Deformation of orthotropic cylindrical shells with discontinuity in thickness subjected to axisymmetric loading
Y. Singh and **A. K. Nagpal**	655	Two-stage solution for framed tube buildings

K. Eisenloffel and **H. Adeli** 665 Interactive microcomputer-aided analysis of tensile network structures

Ping Hu, Jiwei Chen, Yunxing Li and **Jianshe Lian** 677 Numerical analysis of the influence of various factors on forming the limit of hydrostatic bulging for ductile materials

Zhou Ding 685 Free vibration of arbitrarily shaped plates with concentric ring elastic and/or rigid supports

G. D. Stefanou 693 Prediction of creep strains in concrete structures using the concept of specific thermal creep and the principles of variation

Technical Note

E. Yau, H. R. Busby and **D. R. Houser** 705 A Rayleigh–Ritz approach to modeling bending and shear deflections of gear teeth

I Software Survey Section

NUMBER 6

J. S. Chen, K. Satyamurthy and **L. R. Hirschfelt** 715 Consistent finite element procedures for nonlinear rubber elasticity with a higher order strain energy function

S. Pezeshk and **C. V. Camp** 729 Dynamic analyses of multiple-degree-of-freedom structures using a modified Heun method

P. S. Shiakolas, K. L. Lawrence and **R. V. Nambiar** 743 Closed-form expressions for the linear and quadratic strain tetrahedral finite elements

B. Fallahi and **S. H.-Y. Lai** 749 An improved numerical scheme for characterizing dynamic behavior of high-speed rotating elastic beam structures

N. Bencharif and **S. F. Ng** 757 Linear and non-linear deflection analysis of thick rectangular plates—I. Theoretical derivation

N. Bencharif and **S. F. Ng** 763 Linear and non-linear deflection analysis of thick rectangular plates—II. Numerical applications

J. J. Chen and **B. Y. Duan** 777 Structural optimization by displaying the reliability constraints

Junxian Liu and **Gaofeng Wu** 785 Parallel analysis of rotationally periodic structures

Young-Shin Lee, Yeol-Wha Lee and **Moon-Soo Na** 797 Optimal design of hybrid laminated composite plates with dynamic and static constraints

I Software Survey Section

Author Index

Adeli H., 665
Al-Hajry M. A., 147
Atkočiūnas J., 563

Balasubramanian P., 67
Banerjee J. R., 161
Bass J. M., 433
Bencharif N., 757, 763
Busby H. R., 705
Bushnell D., 569
Bushnell W. D., 569

Camp C. V., 729
Carrera E., 217
Chen C. J., 471
Chen J. J., 777
Chen J. S., 715
Chen Jiwei, 677
Chen S. H., 557
Chen S. Y., 491
Chen W.-H., 401
Chern S. M., 471
Connelly J. D., 255, 259
Constantinou M. C., 47
Cook R. D., 549

Duan B. Y., 777
Dubaisi H. N., 287
Dusseau R. A., 287

Eisenloffel K., 665
El-Ghazaly H. A., 147

Fallahi B., 749
Farris T. N., 491
Fereig S. M., 455
Foces A., 201
Frederiksen P. S., 393

Ganesan N., 635
Ganti S. P., 1
Garrido J. A., 201
Ghosh S., 33
Gotsis P. K., 499

Han W. Z., 557
Hari B. S., 1
Hirschfelt L. R., 715
Houser D. R., 705
Hu Ping, 677
Huston R. L., 255, 259, 421
Hwang T., 325

Jagadeesh J. G., 67
Jelenić G., 177
Jomaa S. M., 287

Kant T., 123, 135, 351, 603, 615
Kollár L. P., 525
Kommineni J. R., 123
Kompiš V., 273
Koo K. N., 167
Krätzig W. B., 79
Krenk S., 449
Kumar S., 135
Kwan A. S. K., 237

Lai S. H.-Y., 749
Lawrence K. L., 743
Lee B. C., 279
Lee C. K., 21
Lee H. H., 111
Lee H.-J., 11
Lee I., 167
Lee Y. J., 279
Lee Yeol-Wha, 797
Lee Young-Shin, 797
Li Jianjun, 629
Li Yunxing, 677
Lian Jianshe, 677
Liang Cho-Chung, 317
Liao Ching-Cho, 317
Lin Jiahao, 629
Liu J. H., 367
Liu Junxian, 785
Liu W., 471
Liu Z. S., 557
Lo S. H., 21
Low K. H., 409

Mallett R. L., 33
Manjunatha B. S., 351
Marur S. R., 603, 615
Min J. B., 433
Mukhopadhyay M., 541

Na Moon-Soo, 797
Nagarajaiah S., 47
Nagpal A. K., 655
Nambiar R. V., 743
Ng S. F., 757, 763
Nguyen D. T., 509, 515
Norkus A., 563

Orth F. J., 383

París F., 201
Parsons I. D., 325
Pellegrino S., 237
Petersen T., 393
Pezeshk S., 729
Prasad N. S., 1

Qin J., 509, 515

Ramamurti V., 67
Reinhorn A. M., 47
Roca J. L., 87
Roufaeil O. L., 59

Saje M., 177
Satyamurthy K., 715
Shen L. K., 481
Shiakolas P. S., 743
Shu Xiaoping, 231
Singh U. P., 135
Singh Y., 655
Spradley L. W., 433
Stanley A. J., 635
Stefanou G. D., 693
Suhas H. K., 67
Sun Liangxin, 231
Sung J. C., 191
Surana K. S., 367, 383

Tan Dongyao, 619
Teng Tso-Liang, 317
Tizzi S., 299
Tsai C.-S., 111
Tsopelas P. C., 47
Tu Y.-M., 401

Vaziri H. H., 263
Vlahopoulos N., 97

Wang Y., 421
Williams F. W., 161
Wong D. C., 191
Wu Gaofeng, 785

Yau E., 705

Zhang Jian-Wu, 79
Zhang Wenshou, 629
Zhou Ding, 685
Zikry M. A., 337

Printed in Great Britain by BPC Wheatons Ltd, Exeter